

Cytotoxic effects of Clusterin antisense oligonucleotides and Docetaxel on two prostate cancer cell lines

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*Abstract

Background: Clusterin is a glycoprotein that is overexpressed under stress conditions and causes cell survival by inhibiting apoptosis. Clusterin is overexpressed in prostate cancer. Antisense RNA drugs bind to mRNA of target gene and lead to inhibition of protein translation.

Objective: The aim of this study was to determine the synergistic effects of the Clusterin antisense oligonucleotides and Docetaxel on two prostate cancer cell lines.

Methods: This study was conducted in the Research Institute for Biotechnology affiliated to the Iranian Research Organization for science and technology, 2013. Antisense oligonucleotides in phosphorothioate form targeting Clusterin were delivered into androgen-independent PC3 and androgen-dependent LNCaP cell lines with 25, 50, 100, 200 and 500 nanomolar concentrations. Then cell lines were treated with 100 nanomolar Docetaxel. The effect of antisense oligonucleotides with and without Docetaxel was evaluated using the MTT assay.

Findings: Antisense oligonucleotides induced cell death in both PC3 and LNCaP cell lines. There was a synergistic effect between antisense oligonucleotides and Docetaxel.

Conclusion: Despite the difference in cytotoxicity, there was a synergistic effect between Clusterin antisense oligonucleotides and Docetaxel in both PC3 and LNCaP cell lines.

Keywords: Clusterin, Antisense RNA, Prostatic Neoplasms, Cell Line

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